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KIENA

GOLD MINES

LIMITED

ANNUAL REPORT . . 1965



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KIENA GOLD MINES LIMITED

EXECUTIVE OFFICE7 KING STREET EAST *Toronto***MINE OFFICE**..... *Val d'Or, Quebec***OFFICERS**

J. P. MILLENBACH *President*
G. T. N. WOODROOFFE *Vice-President*
A. C. CALLOW *Secretary*
J. T. McWHIRTER *Treasurer*

DIRECTORS

A. S. DADSON *Toronto*
P. N. PITCHER *Toronto*
J. P. MILLENBACH *Toronto*
G. N. MOORE *Montreal*
R. C. MOTT *Toronto*
W. T. SWENSON *Toronto*
G. T. N. WOODROOFFE *Toronto*

**TRANSFER AGENT
and REGISTRAR**

CROWN TRUST COMPANY
302 Bay Street 393 St. James Street, West
Toronto Montreal

AUDITORSCLARKSON, GORDON & CO. *Toronto***ANNUAL MEETING**

Elizabeth Room,
King Edward Sheraton Hotel, Toronto
Monday, March 21, 1966
10:30 o'clock a.m. (Toronto Time)

KIENA GOLD MINES LIMITED

REPORT OF THE DIRECTORS

TO THE SHAREHOLDERS:

The development and exploration program carried out on your Company's property by Falconbridge Nickel Mines Limited during the past three years, was suspended at the year-end. Expenditures on this program totalled more than \$2,500,000. Falconbridge has advised your directors that it is not prepared at this time to supply funds for further work, or to provide the \$6,000,000 of capital which, it is estimated, will be required to bring the mine into production.

Included with this Annual Report you will find a summary report on exploration and development by Mr. H. C. Herz, Falconbridge Project Manager for Kiena. This reviews the work done during 1965 and the conclusions reached in the feasibility study.

Most of the underground work has been directed towards investigation of the S-50 Zone. Although the zone is persistent, it is not an ore-bearing structure in toto. Ore-grade mineralization is confined to local zone areas and there is evidence that separate and distinct ore shoots occur within these areas. Ore-grade and sub-ore-grade zone material are equally well mineralized with pyrite, and no criteria have been established for distinguishing between them visually. Detailed definition drilling is a requisite.

Between the 900- and 560-foot levels, ring drilling of the zone was done on sections spaced 50 feet apart for a distance of 800 feet. This is sufficiently detailed for general stope planning. However, it does not give a final answer as to the shapes and attitudes of the ore lenses, upon which depend the layouts of individual stopes and positioning of pillars. The degree of selectivity which may be possible in mining operations will not be known until there are more openings in the zone.

The mid-portion of the zone above the 900-foot level contains some relatively high-grade concentrations of ore. At least one third of the tonnage outlined will average 0.3 ounce of gold per ton or higher.

Below the 900-foot level, drilling was carried out on sections spaced 100 feet apart for a distance of 900 feet. This spacing is too great for satisfactory correlations, particularly with respect to the intersections in the deep holes. The average grade of the intersections is lower than of those above the 900-foot level. There are a few intersections of the plus 0.3-ounce class which suggest that ore shoots of better than average grade exist. More down drilling from the 1100-foot level is not practical and investigations should be carried out from lower levels when the shaft is deepened.

Two cross sections are appended to illustrate the S-50 Zone above and below the 900-foot level. It should be noted that these represent interpretations which are not necessarily accepted by all concerned with the Kiena project.

A major project in 1965 was the driving of 1102 North drift to investigate the north extension of the S-50 Zone (indicated by surface hole S-95) and the North Zone, which is approximately 2,500 feet north of the shaft. A plan and a vertical projection of the latter zone are appended.

An intriguing feature of the diamond drilling in both surface and underground holes is the frequency of intersections of ore-grade in silicified andesite above the S-50 Zone and in mineralized basalt below it. At least some of these should represent mineable ore bodies and they would be a matter for routine investigation if the mine were in operation.

Only a relatively small part of the Kiena property has been explored. When the mine is in production, systematic exploration from surface and underground should be carried out as an essential part of the operation.

The S-50 Zone presents some serious mining problems. The altered peridotite which forms much of the hanging-wall, combined with low-angle dips, causes bad ground conditions. No large openings can be left unfilled. The intrusive porphyry and granodiorite dikes are a further complication. Low-cost mining methods cannot be expected. These difficulties are offset in part by the simple metallurgy.

Additional capital required to bring the mine into production is estimated as follows:

Mill, 1200 t.p.d. capacity	\$1,589,500
Other plant, machinery, etc.	1,046,000
Pre-production development including shaft-deepening to 2,250 feet	2,640,000
Working capital	600,000
Contingencies	124,500
	<hr/>
	\$6,000,000

Feasibility studies show that the operation would be a marginal one with gold selling at present prices and assuming continuity of the benefits presently obtainable through the Emergency Gold Mining Assistance Act. The present proven and indicated ore reserve, estimated at 2,767,000 tons averaging 0.23 ounces of gold per ton, should return the additional investment capital in its 6 to 7 years of life. Profitability depends on new discoveries which may result from systematic exploration.

Falconbridge has informed your directors that, in view of the risks involved, further investment in a marginal gold mining operation cannot be justified at this time. Your directors are of the opinion that with higher prices for gold, the mine will be an important one, not only because of the ore that has been outlined and indicated, but also because of the potential in untested parts of the property.

The property has been placed on a care and maintenance basis. The pumps, electrical equipment and cables have been recovered from underground, but all track and pipe has been left in place.

Falconbridge has agreed to waive its right to receive the benefit of any further accruals, after December 31, 1965, of interest on the outstanding debentures or of dividends on the preference shares, all held by that company, until a decision has been reached to place the property in production or to re-organize the capital of the Company.

Mr. P. N. Pitcher was elected a director of the Company to replace Mr. H. S. McGowan, who retired at the end of the year.

Your directors wish to record their appreciation of the efforts of Mr. H. C. Herz, the Project Manager, and those associated with him in carrying out the exploration and development program during the past year.

On behalf of the Board,
J. P. MILLENBACH,
President.

Toronto, Ontario,
February 11, 1966.

**KIENA
GOLD MINES
LIMITED**

(Incorporated under the laws of Ontario)

BALANCE SHEET - DECEMBER 31, 1965

ASSETS

CURRENT:

Cash	\$ 2,916
Receivable from Falconbridge Nickel Mines Limited, parent company	2,650
	<u>5,566</u>

FIXED (note 3):

Buildings, machinery and equipment, at cost	159,324
Mining claims and properties, at cost	334,261
	<u>493,585</u>

OTHER (note 3):

Development and other expenditures (notes 1 and 2)	2,944,575
Deposit for electric power	13,311
	<u>2,957,886</u>

LIABILITIES

LONG TERM:

6% income debentures due December 31, 1977-1978 (note 4)	\$ 250,000
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SHAREHOLDERS' EQUITY:

Capital (notes 1 and 5) —

Authorized:

2,500,000 6% non-voting preference shares with a par value of \$1.00 each (cumulative until December 31, 1968), redeemable at par

5,000,000 common shares without par value

Issued:

1,873,739 preference shares	1,873,739
4,876,848 common shares	895,786
	<u>2,769,525</u>

To be issued:

551,904 preference shares (note 1)	551,904
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Less deficit (no change during 1965)

3,321,429

114,392

3,207,037

\$3,457,037

On behalf of the Board:

J. P. MILLENBACH, Director.

G. T. N. WOODROOFFE, Director.

See notes to financial statements

AUDITORS' REPORT

To the Shareholders of

KIENA GOLD MINES LIMITED:

We have examined the balance sheet of Kiena Gold Mines Limited as at December 31, 1965 and the statement of development and other expenditures for the year then ended. Our examination included a general review of the accounting procedures and such tests of accounting records and other supporting evidence as we considered necessary in the circumstances.

In our opinion the accompanying balance sheet and statement of development and other expenditures present fairly the financial position of the company as at December 31, 1965 and the results of its operations for the year then ended, in accordance with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Toronto, Canada,
February 8, 1966.

CLARKSON, GORDON & CO.
Chartered Accountants.

**KIENA
GOLD MINES
LIMITED**

**STATEMENT OF DEVELOPMENT AND OTHER EXPENDITURES
FOR THE YEAR ENDED DECEMBER 31, 1965**

Balance, December 31, 1964	\$2,368,855
Expenditures during 1965:	
Exploration (including diamond drilling of \$140,017)	175,043
Shaft sinking and underground development	214,545
Engineering	71,518
General expense at the property	77,164
Administrative and corporate expenses	37,450
	575,720
Balance, December 31, 1965	<u>\$2,944,575</u>

See notes to financial statements

**NOTES TO FINANCIAL STATEMENTS
DECEMBER 31, 1965**

1. The company has entered into an agreement to issue preference shares to Falconbridge Nickel Mines Limited as consideration for any prospecting, exploration and development work carried out by Falconbridge on Kiena's property on the basis of one preference share for each \$1 expended; the tax benefits with respect to these expenditures are claimable by Falconbridge. Pursuant to this agreement Falconbridge incurred expenditures of \$551,904 during the year ended December 31, 1965 for which, as at December 31, 1965, it was entitled to receive 551,904 preference shares. During the year the company issued 935,442 preference shares for similar expenditures incurred in 1964.
The agreement also provides that all preference shares outstanding must be redeemed before any dividends are paid on the common shares.
2. Development and other expenditures include a total of \$2,375,157 in respect of which the tax benefits are claimable by other companies.
3. On January 11, 1966 Falconbridge Nickel Mines Limited notified the company that it was not prepared at that time to expend further funds on additional work or to equip the mine for production. Accordingly, all work at the mine has ceased and the recovery of any expenditures made to date is entirely dependent upon future events including among other things a substantial increase in the price of gold.
4. The interest on the income debentures, which is payable only out of profits, is cumulative and at December 31, 1965 amounted to \$38,605.
5. At December 31, 1965 arrears of dividends on the preferred shares amounted to \$163,796.

SUMMARY REPORT ON EXPLORATION AND DEVELOPMENT

THE PRESIDENT AND DIRECTORS,
KIENA GOLD MINES LIMITED

The following is a summary report on exploration and development carried out on the property of Kiena Gold Mines Limited during the year ended December 31, 1965.

Development and exploration was confined to underground work and, in general, followed closely the program outlined for 1965 in last year's annual report. Expenditures under the agreement between your Company and Falconbridge Nickel Mines Limited amounted to \$551,900.

Development

Development progress for the year is summarized in the table below. Most of this work

was done on the 1100-foot level where the drift to test the northward extension of the S-50 zone and to explore the North zone was driven 2,730 feet. The remaining lateral work was confined almost entirely to the completion of a framework of headings to provide bases for the definition drilling of the main S-50 ore-zone.

A short raise was driven from the 560-foot level and some slashing was done on the level to explore a minor ore shoot in the hanging-wall of the main zone. A small amount of raising and slashing was done above the 900-foot level to test the stoping characteristics of the hanging-wall of the main S-50 orebody. This work indicated ground conditions unfavourable to open-stope methods. The raising from the 1100-foot level consisted of numerous single rounds required for drill stations.

SUMMARY OF UNDERGROUND EXPLORATION AND DEVELOPMENT — YEAR 1965

	Diamond Drilling Feet	Drifting & Crosscutting Feet	Raising Feet	Development Slashing Cu. Ft.	Stope Slashing Cu. Ft.	Waste Tons	Ore Broken Tons	oz./T.
560 Level	35,874	47	23	4,824	—	815	524	.20
900 Level	16,279	107	128	1,026	16,448	—	2,187	.40
1100 Level	47,805	3,573	113	13,095	—	21,204	—	—
1250 Level	602	16	—	—	—	—	—	—
TOTAL	100,560	3,743	264	18,945	16,448	22,019	2,711	.36

EXPLORATION

(a) Main S-50 Zone

As the development headings were completed, the primary drilling of the zone was carried through on the original pattern of 100-foot interval cross-sections covering the

ore zone from above the 560-foot level to the 2000-foot level over a strike length of about 800 feet. Following completion of this work in midsummer, an extensive program of fill-in drilling was undertaken to define the most favourable ore-bearing horizon in detail. This consisted of ring drilling from the 560-

900-foot levels on east-west sections spaced midway between the 100-foot interval sections drilled earlier. This program was completed late in the year.

The drilling between these levels has outlined a section, some 350 feet in length, containing concentrations of relatively high-grade ore grading 0.3 ounces per ton or more. The slashing to test the hanging-wall mining conditions was done in this central core and yielded an average grade of 0.40 ounces per ton for a total of about 2,000 tons.

The block between the 560- and 900-foot levels now can be considered as adequately drilled for the purpose of planning mining layouts. However, such planning still would require a detailed analysis of the results to determine whether the better grade concentrations should be mined individually or on a lower cost, less selective basis. In the ore reserves given below the latter assumption was made.

Below the 900-foot level, the 100-foot spacing of drill-sections is too great for the reliable correlation of results, particularly those in the deeper holes extending below the 1100-foot horizon. However, the numerous ore intersections suggest that the presence of ore shoots can reasonably be assumed, although their dimensions and attitudes are not known. Within these limitations, an estimate has been made of the ore potential below the 900-foot level.

The following are the ore reserves in the S-50 zone as at December 31, 1965:

	<u>Block</u>	<u>Tons</u>	<u>Grade oz./T.</u>
Proven Ore	Above 900L.	1,542,000	0.256
Possible Ore	Below 900L.	1,225,000	0.203
Total		2,767,000	0.232

In estimating these reserves, a minimum cut-off grade of 0.12 ounces gold per ton was used, while assays over one ounce gold per ton were cut to one ounce per ton. A dilution factor of 15 percent was applied at a grade of

0.02 ounces gold per ton. No allowance was made for pillar losses.

(b) North Extension of the S-50 Zone

This was first indicated in 1963 by surface hole S-95, approximately at section 8800 north. Holes S-111 and S-118 in the same vicinity also intersected the zone. Underground investigation of the area was carried out during the latter half of 1965 from 1102 north drift. A number of good intersections were obtained but no satisfactory correlations have been made. Within an area measuring 300 feet north to south and 500 feet east to west, lying to the east of 1102 North drift, the zone appears to be relatively flat-dipping though strongly contorted by folding. West of the drift, the dip appears to steepen. The zone is also widely intruded by granodiorite. While, for these reasons, interpretation of results cannot clearly be made, it is likely that at least two ore shoots exist. However, further exploration from existing workings is impractical.

(c) North Zone

The North Zone was found by surface drilling some thirty years ago and was further tested in 1938-1939 by drilling from the 410-foot level. One of the holes in the latter program returned an exceptionally good intersection close to the 1100-foot horizon, averaging 0.54 ounces gold per ton uncut over a core length of 94.8 feet, or 0.372 ounces per ton cut over an estimated true width of 50 feet. In order to explore this zone in detail, 1102 North drift was extended some 2,000 feet beyond the northern extension of the S-50 zone.

The heading intersected the zone at its projected position, returning gold values similar to those indicated by the early drilling. The mineralization was found to occur in a brecciated diorite dike which is extensively intruded by tongues of granodiorite.

Closely-spaced drill holes have shown that the ore is confined to a pipe-like body with maximum horizontal dimensions of 35 feet

north-south and 95 feet east-west (see Plan and Projection of North Zone). It dips north at 70° to 80° and has been traced from just below the 700-foot horizon to below the 1250-foot level where some lengthening appears to take place. Between these elevations the ore-body is estimated to contain 100,000 tons averaging 0.25 ounces per ton.

(d) Other Indications

As in earlier drilling, a number of ore-grade intersections again were obtained outside the S-50 zone. These were found both above and below the zone. Below the zone they are recognized as mineralized basalt while those above it are classified as silicified andesite. Although little is known about these occurrences, it is likely that some of them represent ore shoots deserving of further investigation.

Some slashing and raising was carried out on one of the silicified andesite zones exposed on the 560-foot level. The zone was found to be made up of flat-lying lenses which, though individually of limited extent, are of good grade. The 524 tons excavated from this zone averaged 0.20 ounces per ton.

Other occurrences, though not recently investigated, are recorded here as worthy of further exploration, based on reports covering the early underground work. These include:

1. Northwest Zone — Developed above the 410-foot level northwest of the Parker Shaft. It was estimated to contain 8,000 tons averaging 0.285 ounces per ton.

2. "C Vein" — A mineralized diorite dike exposed on the 410-foot level and drifted for a length of 165 feet averaging 0.23 ounces per ton over 6 feet in width.

3. Wisik Vein — Developed on the 200 and 300-foot levels from the Wisik Shaft on Moccasin Island. It probably contains small tonnages of medium grade ore.

METALLURGICAL TESTS

Numerous tests were made on samples of diamond drill core and of ore broken in the S-50 zone. The largest-scale test involved a pilot mill run of 1,359 tons treated in the cyanide plant of Canadian Malartic Gold Mines Limited. Results indicate that the ore is free-milling and that, at a grind of 70% minus 200 mesh, a recovery of 93% of the gold and a 50% return of deslimed tailings suitable for mine fill can be expected.

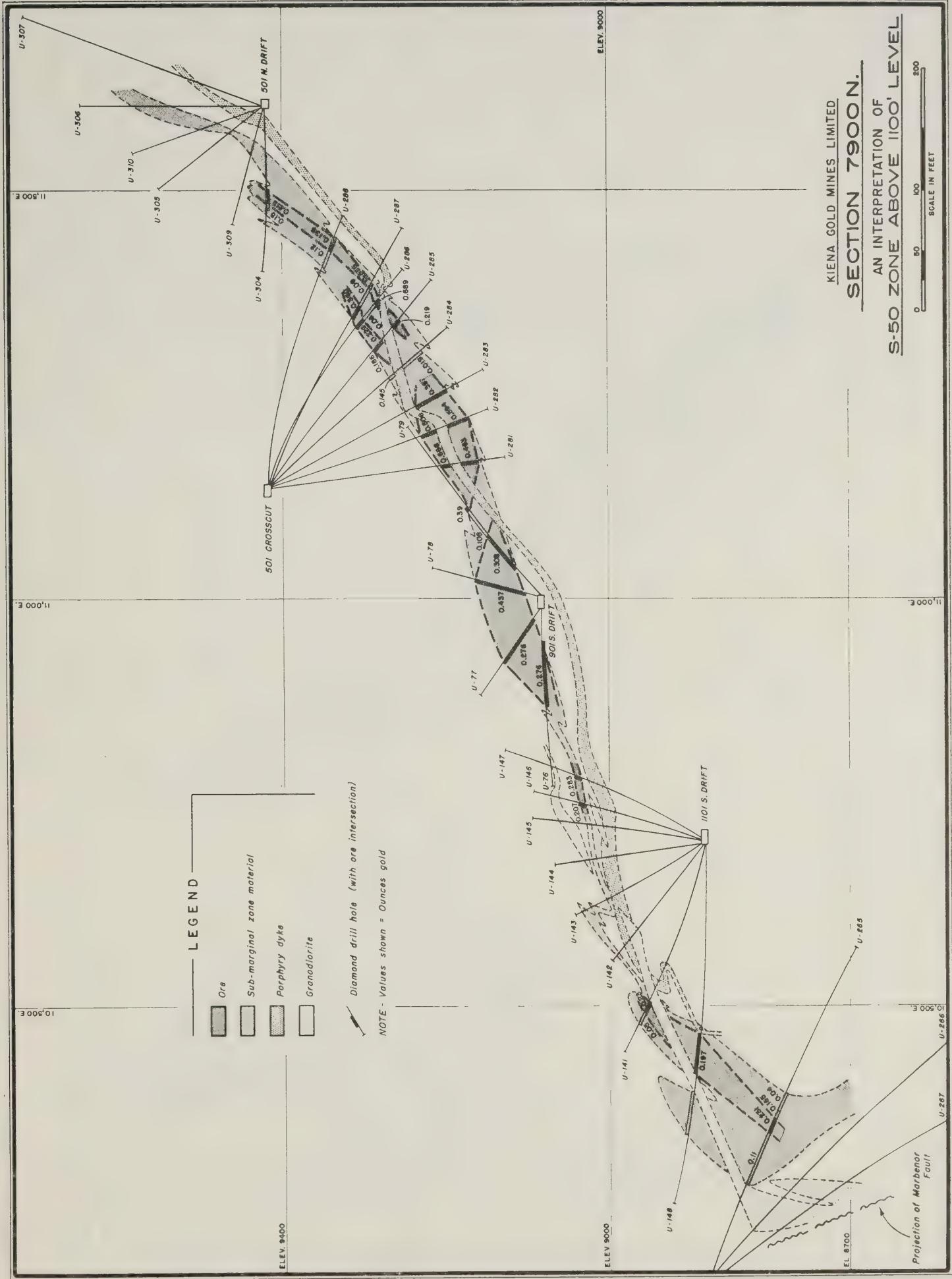
GENERAL

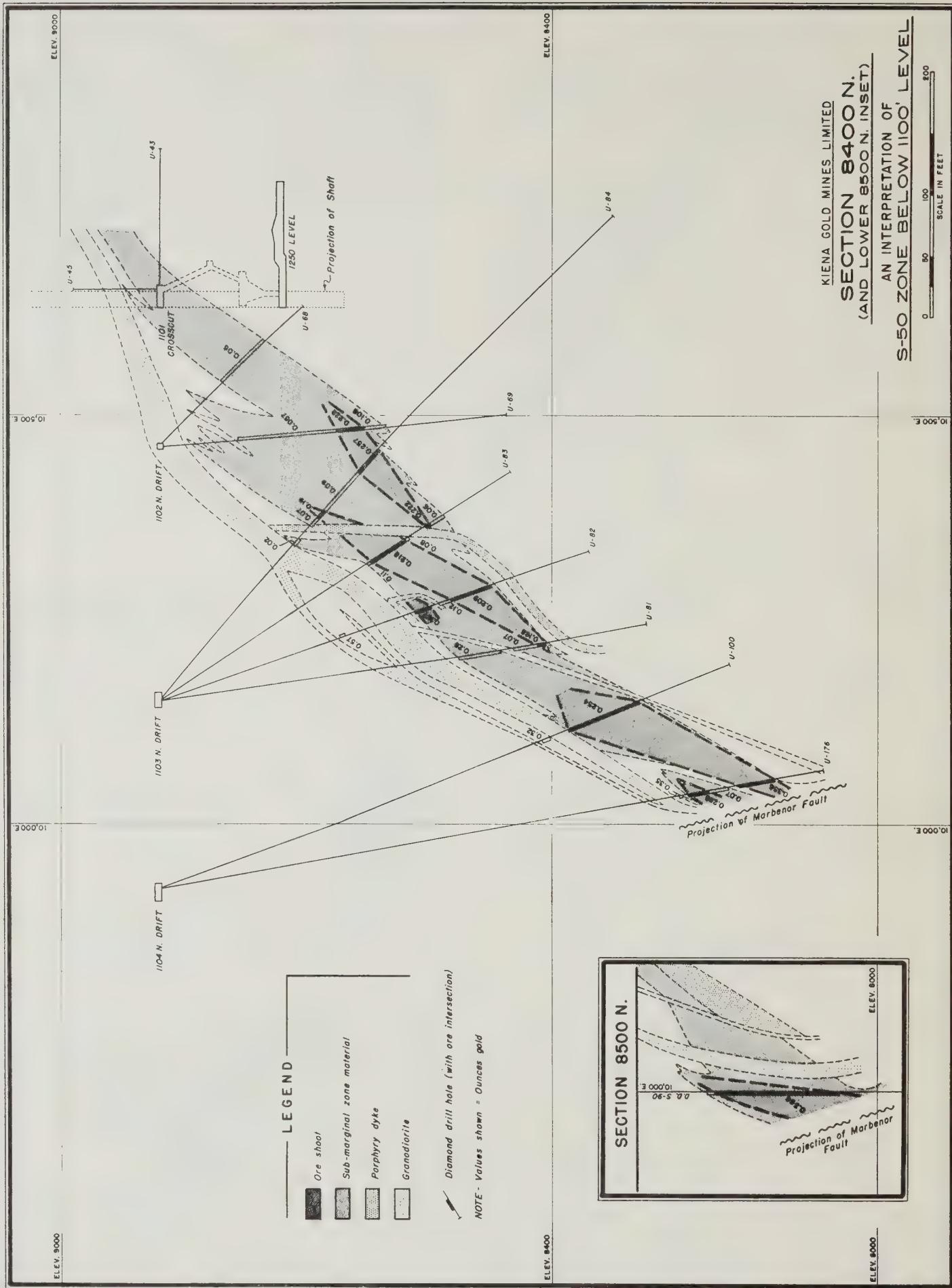
An extensive investigation of possible stoping methods and other phases of preliminary mine planning were carried out during the year. In addition, a feasibility report was completed.

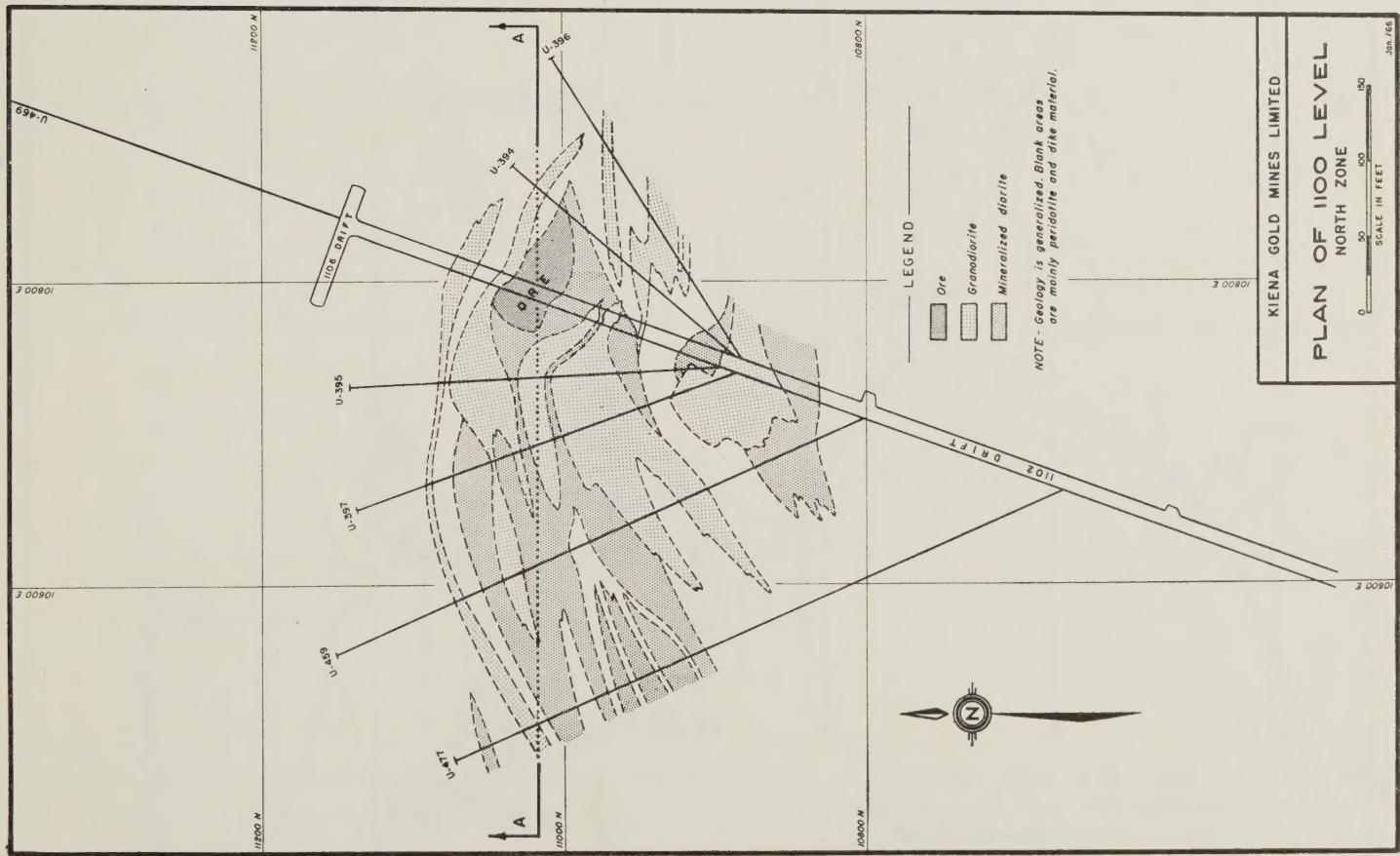
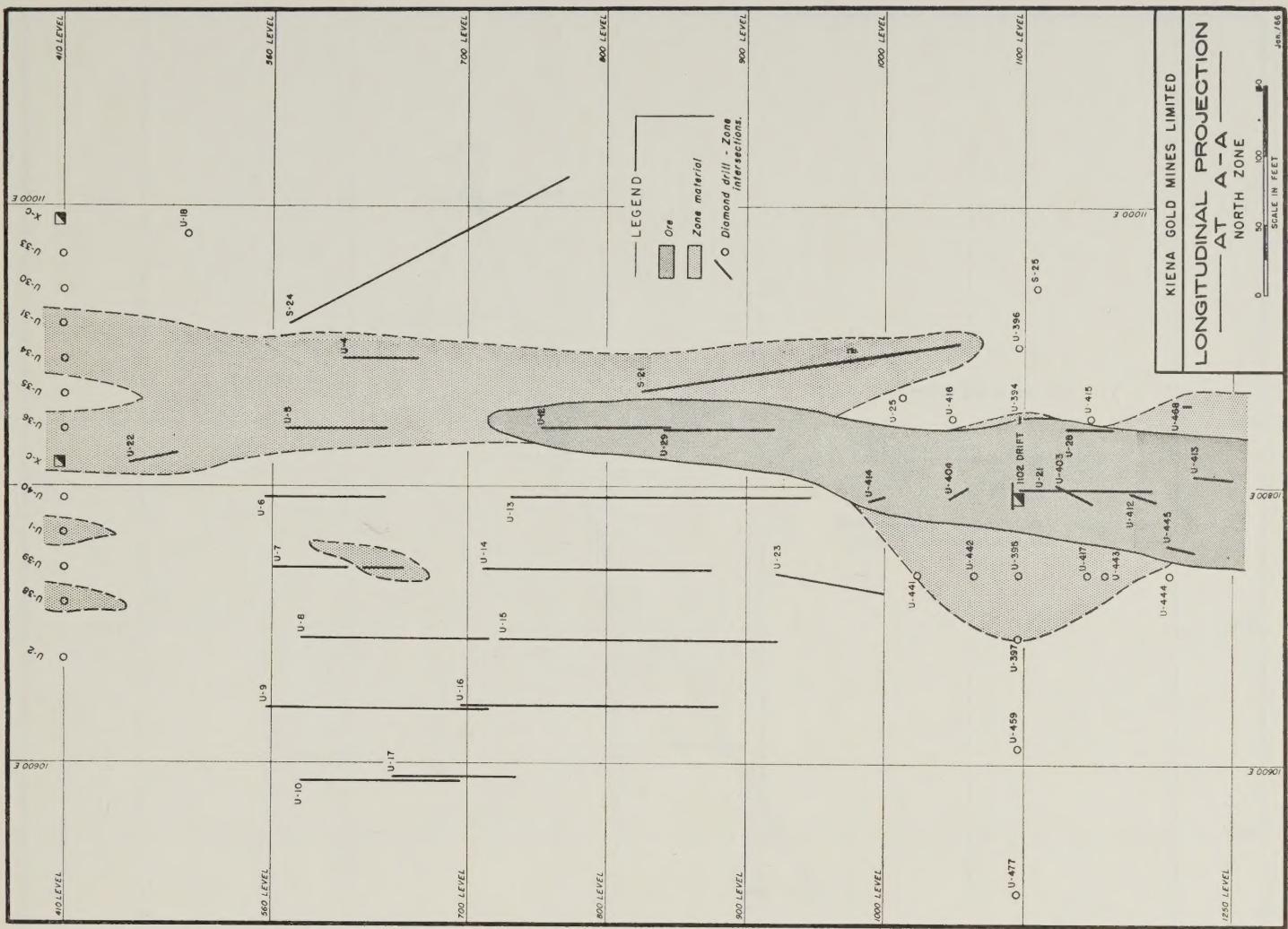
The latter study indicated that, with the addition of a 3000 c.f.m. compressor, the present shaft and mining plant would have a production capacity of 1200 tons per day. It showed also that, although the ore reserves were sufficient to sustain this rate of production for several years, their average grade would be marginal under current conditions. Additional capital required to bring the mine into production was estimated at \$6,000,000.

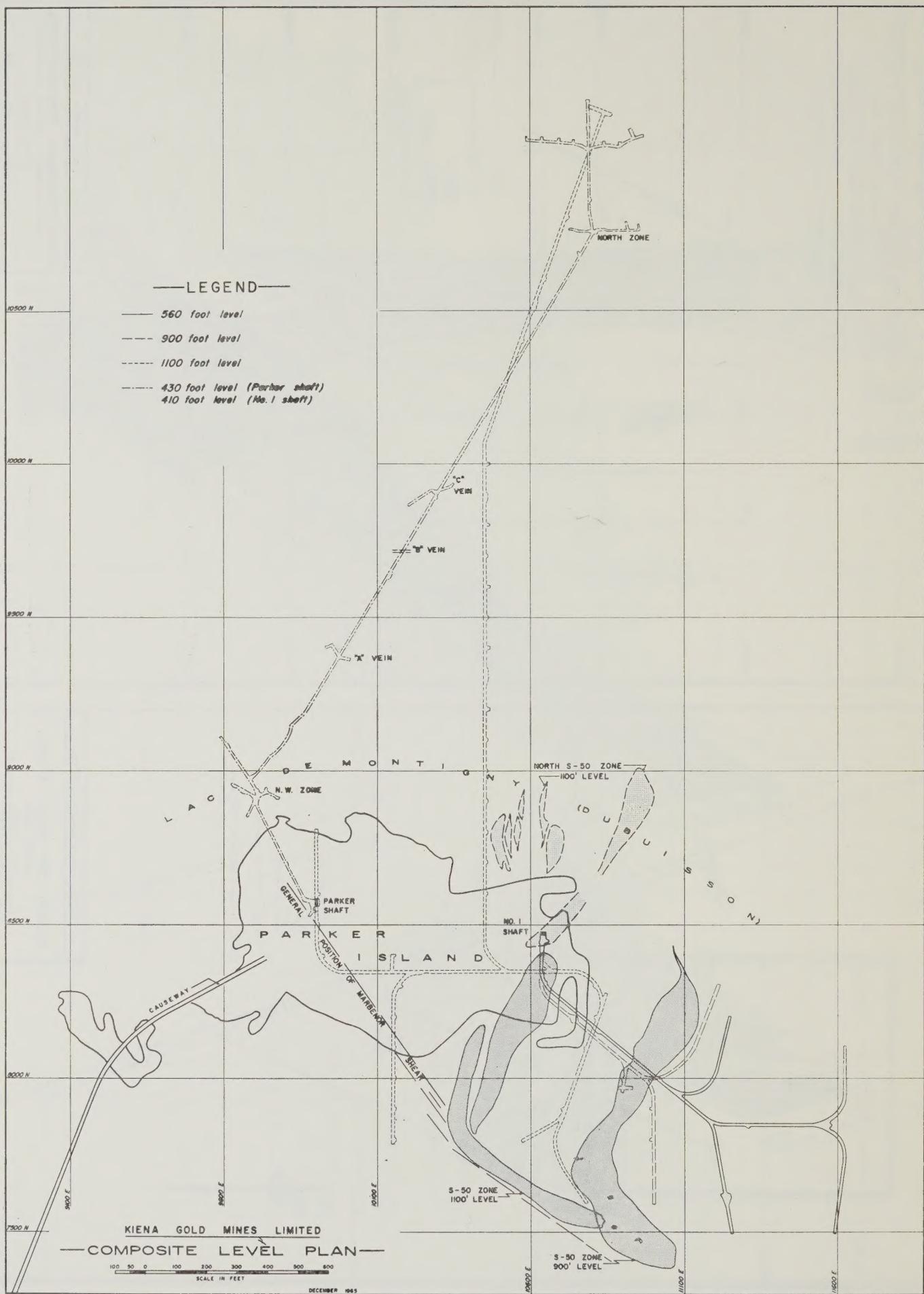
H. C. HERZ,
Falconbridge Project Manager
for Kiena.

Toronto, Ontario,
February 10, 1966.











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